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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,037	02/19/2002	Spencer M. Gold	SMQ-088/P6549	8597
959	7590	02/25/2004	EXAMINER	
LAHIVE & COCKFIELD, LLP. 28 STATE STREET BOSTON, MA 02109			VERBITSKY, GAIL KAPLAN	
			ART UNIT	PAPER NUMBER
			2859	

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/080,037	Applicant(s) GOLD ET AL.	
	Examiner Gail Verbitsky	Art Unit 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2003.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-11, 15 and 16 is/are rejected.
7) ☒ Claim(s) 12-14 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/12/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 12 objected to because of the following informalities: "counter register" in line 10 lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 9-11, 15-16 are finally rejected under 35 U.S.C. 102(b) as being anticipated by Iwama (U.S. 4658407).

Iwama discloses in Figs. 1-2 a thermometer/ temperature sensing device/ thermal sensor comprising an oscillator circuit having a reference (first) oscillating circuit 20 which outputs (generates) a first (reference) oscillating signal whose frequency (first frequency value) does not depend on temperature, and a thermometric (second) oscillating circuit 10 which outputs (generates) a second (temperature dependent) oscillating signal whose frequency (second frequency value) depends on temperature. Iwama also discloses two counters (first/ temperature dependent) 12 and (second/ reference) 22. The (reference) counter 22 counting oscillations of the reference oscillator 20 and outputting an overflow (reaching a predetermined value) signal to discontinue the oscillation of the thermometric (second) oscillator 10 after a prescribed

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time to take temperature measurements (col. 3, lines 7-11). A controlling circuit 24 determines if the temperature reaches its maximum value, and resets the counter 22 if not. Thus, production of the thermometric (second) oscillator 10 is inhibited (halted) by the first counter when the reference oscillator/ counter reached its overflow (predetermined) value. A comparison circuit (detector circuit) 16 detects when (detects the edge) a reset signal should reset to the second counter.

4. Claims 1-2, 9, 15-16 are finally rejected under 35 U.S.C. 102(b) as being anticipated by Fujikawa et al. (U.S. 5626425) [hereinafter Fujikawa].

Fujikawa discloses in Fig. 2 a device comprising an oscillator circuit having a reference oscillator 1 to produce a first reference oscillating frequency signal, a second temperature dependent oscillator 3 to produce a second temperature dependent frequency signal. The device also comprises a temperature counter (second) 6 for measuring the output signal from the temperature sensitive oscillator 3 and, along with a data hold unit 7 holding/ halting the maximum value of said signal to produce a temperature count on the basis of the reference oscillating signal. A first counter (reference control generator) 2 receives the reference oscillating frequency signals and outputs a carrier signal (predetermined value).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3-4 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Iwama in view of the Prior Art by Woodman, Jr. (U.S. 5832048) [hereinafter Woodman].

Iwama discloses the device as stated above in paragraph 3.

Iwama does not explicitly teach that the reference oscillator circuit comprises a VCO controlled by a temperature *independent* voltage source.

Woodman discloses in Fig. 2 a device in the field of applicant's endeavor comprising a voltage regulator (A/D, arithmetic FFT and D/A) and a voltage controlled oscillator generating a (first) oscillating signal based on a temperature independent voltage source (reference oscillator).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device, disclosed by Iwama, so as to have the reference oscillator comprised a VCO controlled by a temperature independent voltage source, as taught by Woodman, because both of them are alternate types of oscillators which will perform the same function of providing an oscillating reference frequency, if one is replaced with the other.

7. Claims 3-4 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Iwama in view of Fry (6362699).

Iwama discloses the device as stated above in paragraph 3.

Iwama does not explicitly teach that the reference oscillator circuit comprises a VCO controlled by a temperature *independent* voltage source.

Fry discloses in Fig. 2 a device in the field of applicant's endeavor comprising a temperature independent voltage source 28, 29, 30, voltage regulator 18,19, 20 and a voltage controlled (tunable) oscillator 16 generating a (first) oscillating signal based on the temperature independent voltage source.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device, disclosed by Iwama, so as to have the reference oscillator comprised a VCO controlled by a temperature independent voltage source, as taught by Fry, because both of them are alternate Types of oscillators which will perform the same function of providing an oscillating reference frequency, if one is replaced with the other.

8. Claim 5 is finally rejected under 35 U.S.C. 103(a) as being unpatentable over Iwama in view of Hodate (U.S. 5193387).

Iwama discloses the device as stated above in paragraph 3.

Iwama does not explicitly teach that the temperature dependent oscillator circuit comprises a VCO controlled by a temperature *dependent* voltage source.

Hodate discloses a VCO 64 outputting a signal of a frequency proportional to a voltage inputted from a temperature transducer (temperature dependent voltage source) 60.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Iwama, so as to have the temperature dependent oscillator comprised a VCO controlled by a temperature

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dependent voltage source, as taught by Hodate, because both of them are alternate types of oscillators which will perform the same function of providing an oscillating temperature dependent signal if one is replaced with the other.

9. Claim 6 is finally rejected under 35 U.S.C. 103(a) as being unpatentable over Iwama and Hodate as applied to claim 5 above, and further in view of Binder (U.S. 5892408).

Iwama and Hodate disclose the device as stated above in paragraph 8.

They do not explicitly a voltage regulator to regulate a temperature dependent voltage source, as stated in claim 6.

Binder discloses in Figs. 4 and 11 a device in the field of applicant's endeavor, the device comprising a voltage regulator 80 to regulate a temperature dependent voltage (col. 16, lines 7-8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Iwama and Hodate, so as to add a voltage regulator, as taught by Binder, so as to produce a controlled output temperature dependent signal, in order to improve high accuracy of measurements.

10. Claim 8 is finally rejected under 35 U.S.C. 103(a) as being unpatentable over Iwama and Hodate as applied to claim 5 above, and further in view of Pippin (U.S. 5838578).

Iwama and Hodate disclose the device as stated above in paragraph 8.

They do not explicitly a bandgap reference circuit, as stated in claim 8.

Pippin discloses in Figs. 1, 3 a device in the field of applicant's endeavor wherein a temperature dependent voltage source comprises a bandgap reference circuit.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a bandgap voltage reference circuit, as taught by Pippin, to the dependent temperature voltage source, disclosed by Iwama and Hodate, so as to provide a stable voltage source and to eliminate/ minimize drift/ noises, in order to improve accuracy of the device.

12. Claim 7 is finally rejected under 35 U.S.C. 103(a) as being unpatentable over Iwama and Fry as applied to claims 3-4 above, and further in view of Holmdahl (U.S. 5097198).

Iwama and Fry disclose the device as stated above in paragraph 7.

They do not explicitly disclose an independent voltage regulator/ bandgap reference circuit.

Holmdahl disclose a device having a temperature independent voltage source (generator) such as a bandgap voltage source.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a bandgap voltage reference circuit, as taught by Holmdahl, to the independent temperature voltage source, disclosed by Iwama and Fry,

so as to provide a stable voltage source and to eliminate/ minimize drift/ noises, in order to improve accuracy of the device.

13. Claim 7 is finally rejected under 35 U.S.C. 103(a) as being unpatentable over Iwama and Fry as applied to claims 3-4 above, and further in view of Lipp (U.S. 4165642).

Iwama and Fry disclose the device as stated above in paragraph 7.

They do not explicitly teach that an independent voltage reference source is/ comprises a bandgap circuit.

Lipp discloses in Fig. 1 a temperature independent voltage source comprising a bangap voltage reference circuit 18.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a bandgap voltage reference circuit, as taught by Lipp, to the independent temperature voltage source, disclosed by Iwama and Fry, so as to provide a stable voltage source and to eliminate/ minimize drift/ noises, in order to improve accuracy of the device.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Allowable Subject Matter

15. Claims 12-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

16. Applicant's arguments filed on November 04, 2003 have been fully considered but they are not persuasive.

With respect to Iwama: Applicant states that Iwama does not teach a thermal sensor having an *oscillator circuit to generate first and second oscillating signals*. This argument is not persuasive because, although Iwama does not use the exact Applicant's terminology, Iwama teaches a thermal sensor/ thermometer (device to sense temperature). The thermometer, as shown in Fig. 1, inherently, has an electrical circuit. The circuit of the thermometer comprising a first (reference) oscillating circuit and a second (thermometric) oscillating circuit outputting first (reference) and second oscillating signals. This would imply that the circuit of the thermometer, which comprises first and second oscillating circuits, could be called an *oscillator circuit*.

With respect to Fujikawa: Applicant states that Fujikawa teaches a single oscillating signal. This argument is not persuasive because Fujikawa teaches a

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thermometer (entire col. 2) whose circuit (oscillator circuit) comprises two oscillators 1 and 3 to generate first (reference) and second (temperature dependent) oscillating signals.

Conclusion

17. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Verbitsky who can be reached at (703) 306-5473 Monday through Friday 7:30 to 4:00 ET.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-5473.

GKV

Gail Verbitsky
Primary Patent Examiner, TC 2800

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05 February 2004

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A handwritten signature in cursive script, appearing to read "C. V. V. H. H.", located in the upper right quadrant of the page.